

AdvanTex[®] Treatment and Dispersal System
GMP #114A
April 9, 2008

I. System Description

The AdvanTex[®] Treatment and Dispersal System for which this approval has been granted, consists of the key components described in general below and described in detail in Appendix I and II. Except where a specific waiver to the *Sewage Handling and Disposal Regulations* (hereinafter the *Regulations*) has been granted, the site criteria, design, installation, inspection, and operation of the components comprising the AdvanTex[®] Treatment System shall comply with the intent, objectives and requirements of the *Regulations*. The substitution of equivalent components is specifically prohibited.

A. Building Sewer. The building sewer used in conjunction with an AdvanTex[®] Treatment and Dispersal System shall comply with Part IV, Article 2 of the *Regulations*.

B. Processing Tank. The AdvanTex[®] Processing Tank is a two-compartment tank with a first (primary) compartment that is 2/3 the total volume of the tank and a second (recirculation) compartment that is 1/3 the total volume of the tank. The recirculation compartment houses the Biotube Pump Vault containing the recirculation pump that doses effluent to the AdvanTex[®] module.

C. Treatment System. The AdvanTex[®] modules are made of pre-assembled, UV-protected fiberglass reinforced plastic material. Contained within the fiberglass module is an engineered non-biodegradable textile media. Only AX20 modules may be used for residential treatment systems in Virginia.

Single or multiple AdvanTex[®] modules may be used in accordance with Table 1, based on the number of bedrooms or the equivalent flow. When more than one module is used, each module is installed at the same elevation with effluent flow uniformly split between both modules.

Table 1

Number of Bedrooms	Minimum Single Processing Tank Size (gals.)	Processing Tank split into separate Primary and Recirculating Tanks ¹	Number of AX Modules
2	1,500	NA	1-AX20
3	1,500	NA	1-AX20
4	1,500	NA	1-AX20
5	2,500	1,500 gallon primary tank 1,000 gallon recirculation tank	2-AX20
6	3,000	2,000 gallon primary tank 1,000 gallon recirculation tank	2-AX20

¹ Larger tank sizes may be used.

D. Control Panel. The recirculation pump and discharge pump, if provided, are controlled by an AdvanTex VeriComm[™] telemetry control panel. Appendix II lists authorized control panels which shall be used in accordance with Orenco Systems, Inc (herein after Orenco) design manual.

E. Conveyance System. The effluent conveyance components are designed to move effluent from the AdvanTex[®] Treatment System to an absorption area. The three modes of conveyance are:

1. Gravity,
2. Pumping to gravity distribution, and
3. Pumping to pressure distribution.

Effluent may be discharged to the dispersal area by:

1. Gravity in accordance with 12 VAC 5-610-870, or
2. A discharge pump in a proprietary pre-engineered pump basin listed in Appendix II, or
3. A discharge pump in an Orenco approved discharge tank listed in Appendix II.

F. Absorption Area. The absorption area consists of the infiltrative surface where effluent is applied and the native or fill soil between the trenches or drip tubing. Any method of effluent application may be utilized provided it is approved by the Department and authorized by the manufacturer.

II. Waivers

A. Scope. The following waivers to the *Regulations* are granted for facilities generating residential strength wastewater that have a design flow not exceeding 1,000 gallons per day.

For the purposes of this policy, "Residential strength wastewater" means sewage generated by residential uses, not containing industrial influent or storm water and having no other toxic, hazardous, or constituents not routinely found in residential wastewater flows, or as certified by a professional engineer. Certification by a professional engineer shall consider the wastewater strength as well as peak and average daily flows. The results of the analysis submitted with the permit application shall include a finding of the equivalent number of bedrooms on which to base the design.

B. Trench width. 12 VAC 5-610-950 E.2, limits absorption trenches to widths between 18 inches and 36 inches. This section is waived to allow the use of absorption pads. For the purposes of this policy, a pad is defined as an absorption area wider than 3 feet but not longer than 100 feet. Absorption pads may be used under the following conditions:

1. A system may contain one or more pads.
2. The combined area of all pads in a system may not exceed 1,200 square feet.

3. Pads and trenches may not be used together in a single system.
4. Pads shall be limited to sites with slopes of 10% or less.

C. Minimum Installation Depth. 12 VAC 5-610-596 C.1, which limits the installation of trenches shallower than 12 inches to Texture Group I and II soils is waived for slopes up to 15%². The infiltrative surface (i.e., the bottom of the pad or trench) shall be installed at grade or deeper on naturally occurring undisturbed soil. No fill material shall occur beneath the infiltrative surface. On sloping sites the installation depth shall be measured on the downhill side of the trench or pad.

D. Minimum Cross Section Dimensions 12 VAC 5-610-950.E.1 is waived. This section establishes how sidewall depth is measured and requires increases in the installation depth of trenches as the slope of the site increases. By waiving §950.E.1 absorption systems designed under this policy may be installed at grade even on steeper slopes. No distinction is made between pads and trenches. Section 12 VAC 5-610-950.F, which increases the lateral separation distance between trenches as the slope of the site increases, is not waived.

Designers are encouraged to use a conservative approach when designing shallow placed systems on sloping sites to prevent effluent from breaking out at the contact between the original soil surface and the fill interface.

E. Loading rates. Table 5.4 of the *Regulations* and 12 VAC 5-610-950 D, which establish loading rates for subsurface soil absorption systems, are waived. Systems designed pursuant to this policy shall use Table 3 contained herein to determine the maximum acceptable loading rates. Designers are authorized to use lower loading rates.

F. Pump system designs.

1. Pumps Integral to Treatment Systems. Pumps integral to the treatment system are pumps that move sewage or effluent from the house or pretreatment system to the treatment system and/or pumps that move effluent within the treatment system. The *Regulations* do not specifically address pumps used for purposes other than conveying effluent to a dispersal system. 12 VAC 5-610-880 is waived in its entirety for pumps, pump chambers, and appurtenances integral to treatment systems.

2. Conveyance Pumps. The pump requirements contained in 12 VAC 5-610-880 subsections A.1, B.1, B.6, and B.7 are waived. Pump systems designed in accordance with these sections of the *Regulations* are not appropriate for systems dispersing treated effluent to a reduced size absorption area. Therefore, the use of the pump design criteria in subsections B.1, B.6 and B.7 in the *Regulations* is expressly prohibited except when the sizing criteria in Table 5.4 of the

² This means that for slopes up to 15% there are no soil texture group limitations for shallow placed systems.

Regulations are used³. Consequently, only pump systems recommended by the manufacturer and approved by the Division of Onsite Sewage and Water Services (herein after, the Division) may be used in accordance with this GMP.

3. Division approved pump systems appropriate for use with this manufacturer's system are either described in this policy or may posted as an addendum to this policy on the Division's website.

G. Separation distances to water table. The separation distances between the infiltrative surface of a soil absorption system and a water table as shown in Table 4.3 of the *Regulations* are waived in lieu of Table 2 of this policy.

Table 2	
Separation Distance between Infiltrative Surface of Soil Absorption System and Water Table	
Percolation Rate	Separation Distance
1-25	6 inches
26-37	8 inches
38-49	10 inches
50-120	12 inches

H. Separation distance to impervious strata for shallow placed systems. An impervious stratum is defined as a soil feature that has a measured or estimated percolation rate in excess of 120 minutes per inch. For the purposes of this policy impervious strata include but are not limited to bedrock, pans, restrictions, or shrink-swell soil. The separation distance to these features for a shallow placed system is shown in Table 4.3 of the *Regulations*, with the exception of the separation distance to water table. Table 2 of this policy provides the minimum separation distance to a water table.

The separation distance to an impervious strata may be reduced from 18 inches to a distance not less than 12 inches below the trench bottom when a professional engineer certifies in writing that they have evaluated the hydraulic capacity of the site to disperse wastewater and that in their professional opinion, water mounding will not encroach on the separation distance required in Table 2 above⁴.

I. Plans and Specifications. When plans conform to requirements of GMP #125, the requirement for formal plans and specification required in 12 VAC 5-610-250.C is waived. Typical treatment system drawings and specifications are shown in Appendices I and II respectively. When used in conjunction with a permit sketch, site specific specifications, and manufacturer installation criteria, these documents will normally be

³ The requirement in subsection A.1 for a velocity of two feet per second to achieve scouring, while not necessarily needed for treated wastewater, may be used at the discretion of the designer.

⁴ This requirement is for a written certification, signed, sealed and dated by a professional engineer licensed in Virginia. This requirement does not mandate the submission of calculations used to make this determination.

sufficient to assure a system can be properly installed. In some instances where a complex system is encountered, formal plans and specifications may be required. This determination is left to the discretion of the District Health Department.

GMP #125 is intended to provide additional guidance and consistency when a professional engineer is required. Nothing contained herein is intended to contradict GMP #125. Whether or not to require a professional engineer for timed dosing has been a point of confusion. Timed dosing to a gravity flow distribution box does not necessarily require a design prepared by a professional engineer when the conditions described in GMP #125 (and briefly described below) are met.

The design of pumping systems for the purpose of transporting the wastewater from the treatment device described by this policy, to the location of the soil based treatment system, does not necessarily require a design by a professional engineer provided:

1. The design involves elevations that are generally level or constantly ascending, and
2. The discharge end is open and not pressurized, and
3. The design does not involve pumping downhill, and
4. The design does not exceed 50 feet of static head and/or 500 feet of force main length.

Note: When timed dosing or enhanced flow is applied to a treatment device that is located directly above an absorption pad, the designer may assume that the effluent is delivered in the same manner to the pad that it was applied to the treatment device.

J. The depth of gravel specified in 12 VAC 5-610-930.E is not waived (nor has it ever been waived). All trenches and pads, which use aggregate, shall be designed using 6 inches of gravel (or other approved aggregate) under gravity percolation lines and 2 inches over the line. For LPD (low pressure distribution) systems 8.5" of aggregate is required under the pipe and 2" over the pipe.

III. Siting Criteria

This policy authorizes the use of sites that meets one of the following classifications:

1. Any site that fully complies with the criteria contained in the *Regulations*, including, but not limited to, absorption area, sizing percolation rate, landscape position, stand-off distances, and set-back distances. This includes sites that comply with the *Regulations*, whether or not secondary effluent is required.
2. Any site that does not fully comply with the criteria contained in the *Regulations* where a waiver to the non-conforming condition or conditions has been granted in this policy.
3. Repair permits that fully comply with this policy are considered to meet the intent of 12 VAC 5-610-280 C.2. Repair permits that do not fully comply with the

siting criteria contained in this policy or the *Regulations* must use Table 5.4 in the *Regulations* in order to comply with Section 280 C.2.

Table 3

Hydraulic Loading Rates for Absorption Systems Designed Under this Policy				
Percolation Rate (Minutes/Inch)	Gallons Per Day Per Square Foot of Horizontal Surface			
	Pads	Trenches		
		1.5 wide	2.0 wide	3.0 wide
20 or less	1.66	2.78	2.5	2.22
25	1.33	2.22	2.00	1.78
30	1.11	1.85	1.66	1.48
35	0.95	1.59	1.43	1.27
40	0.83	1.39	1.25	1.11
45	0.74	1.23	1.11	0.99
50	0.67	1.11	1.00	0.89
55	0.61	1.01	0.91	0.81
60	0.55	0.93	0.83	0.74
65	0.51	0.85	0.77	0.68
70	0.48	0.80	0.72	0.64
75	0.44	0.74	0.67	0.59
80	0.42	0.69	0.63	0.56
85	0.39	0.65	0.59	0.52
90	0.37	0.62	0.56	0.49
95	0.35	0.58	0.53	0.47
100	0.33	0.56	0.50	0.44
105	0.32	0.53	0.48	0.42
110	0.30	0.51	0.45	0.40
115	0.29	0.48	0.43	0.39
120	0.28	0.46	0.42	0.37

Note: For drip dispersal sizing requirements see item A.6 under Section IV Field Design (above).

IV. Design Criteria

All portions of the system shall be designed to provide wastewater treatment and disposal, which is equal or superior to that obtained with a conventional gravity drainfield system. In general, the system must provide primary treatment, followed by additional wastewater treatment to produce an average BOD₅ of 10 mg/l, and effluent distribution and application to soils capable of providing sufficient additional treatment to render the wastewater harmless to humans and the environment.

A. Absorption Area Design. The absorption area may consist of any dispersal method approved by the department and authorized for use by the manufacturer. Should a

conflict exist between a manufacturer's design criteria and the *Regulations* or this policy, the Department's criteria shall take precedent.

The absorption area determined to be necessary under this policy may be achieved by use of either an absorption pad or absorption trenches, provided:

1. The minimum standoff distance to water table, or other limiting factor, is achieved under the entire absorption area. This assures that at least the minimum requirement for suitable soil exists between all parts of the infiltrative surface and the underlying limiting factor.
2. The absorption area, (either pads or trenches) is installed on contour. When a pad system is designed the longest dimension of the pad shall be along the contour. Contour means that the longitudinal axis of the pad follows the contour of the site within 4 inches (i.e., +/-2"). Pads are considered marginally sufficient to achieve hydraulic dispersal of the effluent. Every effort *should* be made to minimize the linear loading rate, particularly when using a pad design.
3. When a pad is utilized, the bottom pad area shall be installed level while maintaining at least the minimum required separation distances to all soil limiting factors.
4. No portion of the pad bottom area may be installed on fill material.
5. The system shall be designed to provide equal flow, within 10 percent, throughout all portions of the absorption area. Distribution of effluent by gravity or pressure dosing (before or after the treatment system) is acceptable.
6. When designing a drip dispersal system the designer may use the loading rate shown for either the two or the three foot wide trenches shown in Table 3. To determine the area needed, divide the daily peak wastewater flow in gallons by the loading rate (GPD/sq. ft.) selected from Table 3. Multiply this result by three to determine minimum footprint area in square feet. The drip dispersal design guidance in GMP #107 applies to the design of the drip field. Where slopes and/or restrictive horizons are a consideration, the Absorption Area Increase Table in GMP #107 shall be followed.
7. When a pad is proposed for use within 20' up slope or down slope from another proposed or actual absorption system, the Department shall require a professional engineer to certify that the upslope system will not adversely impact the down slope system.

B. Area Requirements and Calculations. The absorption area shall be sized in accordance with Table 3 of this document. A larger area may be specified by the designer.

1. The minimum absorption area shall be 320 square feet.
2. No additional area reduction shall be permitted for the use of water saving fixtures.

C. Distribution.

1. All absorption trenches shall use parallel distribution (i.e., either a distribution box or pressure distribution).
2. Distribution to the absorption area may be accomplished by gravity flow to an underlying pad or a distribution box, or under positive pressure to a manifold. In any case, effluent shall be applied proportionally to the absorption area as described in Part IV A (Field Design) above.

D. Depth. The infiltrative surface that comprises the absorption area may be installed at grade. On sloping sites this shall be measured on the downhill side of the installation (i.e., no fill material may be placed below the absorption system).

E. Cover material shall be provided from the top edge of the absorption system horizontally in all directions to existing grade and shall cover the top and side of the absorption area, which may be exposed during construction. The designer shall include sufficient cover in the system design to prevent freezing. In no case shall the depth of cover be less than four inches (note: in some areas of the state this may be insufficient to provide frost protection). The finished slope of the cover material shall not exceed 1:4 (rise:run) and a slope of 1:6 or shallower is preferred.

V. Installation

A. No contractor shall install a system in Virginia authorized under this policy unless they are first trained and certified by the manufacturer as having passed their minimum training qualifications. The manufacturer shall maintain a current list of qualified installers and shall make the list available to the Virginia Department of Health (herein after VDH) through its website or by other appropriate means.

B. The manufacturer shall ensure that only certified and trained contractors install their proprietary systems according to manufacturer approved procedures.

C. VDH may approve a properly installed system if the only defect is that the contractor who installed it was not certified by the manufacturer. If a manufacturer fails to adequately enforce this provision, such failure may be grounds to terminate the manufacturer's authorization pursuant to this policy.

D. The manufacturer's recommendations shall be followed for system startup.

E. All mechanical components, pumps, pump cycling, filters, systems must be demonstrated to be fully operational in accordance with their design.

VI. Operation and Maintenance

Routine maintenance is essential for proper operation of the system. Failure to maintain a system *will* result in increased public health and environmental risks. After July 1, 2009 all systems permitted pursuant to this policy will be required to have operation and maintenance provided by a licensed wastewater system operator for the life of their system. Prior to July 1, 2009, VDH strongly urges all system owners to assure operation and maintenance is provided in accordance with the manufacturers recommendations.

All system owners shall be provided with written and oral instructions on the proper operation and maintenance of their system. Providing system owners with updates, revisions and other changes to this section is the responsibility of the manufacturer. Copies of changes shall be submitted to the VDH on an informational basis. Nothing in this approval is intended to prevent or restrict the development of instructional materials for public use. No prior approval of such literature is required provided the literature contains no endorsements, approvals, or suggestions that VDH in any manner promotes the use of one system above any other.

VII. Responsibilities and Permitting Procedures

A. Permitting shall be done by the local health department based on a satisfactory site evaluation and review of plans and specifications prepared in accordance with all applicable state regulations and policies and any relevant local ordinances.⁵ Systems permitted under this policy are Type III systems (see 12 VAC 5-610-250.C); however, the process for issuing permits under this policy shall be handled in the manner described for Type II systems (see 12 VAC 5-610-250.B).

B. The local health department shall attach a copy of this policy to all construction permits granted pursuant to this policy.

C. Construction permits (i.e., not operation permits) are valid for a period of 18 months. Upon successful completion of the provisional protocol, unused construction permits will be treated as conventional construction permits and may be renewed upon expiration. In the event that the system fails the provisional protocol, unused permits will not be renewed. Permits shall note the provisional or experimental nature of the system and that they cannot be converted to a certification letter. Upon successful completion of the provisional protocol, the holder of a valid provisional permit may convert the same to either a conventional construction permit or a certification letter.

D. Permits issued for the system authorized by this policy prior to the effective date of this policy shall continue to be valid until such time as the permit is installed or expires 18 months after the date of issuance. Expired permits shall be reissued upon receipt of a proper application filed in accordance with the established requirements of VDH and shall conform with current policy to the greatest extent practical.

⁵ Either a Level 1 or a Level 2 review of work submitted by an AOSE/PE shall constitute compliance with state regulations and policies.

E. The manufacturer shall be responsible for providing up to six classes (up to 50 students each) during the first six months after this approval is granted and two classes annually thereafter. The training shall include a manual covering proper siting, sizing, construction, and installation and inspection processes for the system described in Section I. All training materials, the course syllabus and training locations shall be reviewed and approved by the Division prior to training occurring.

F. The manufacturer shall maintain an accurate and up-to-date web-based listing of authorized installers and approved process and pump tanks.

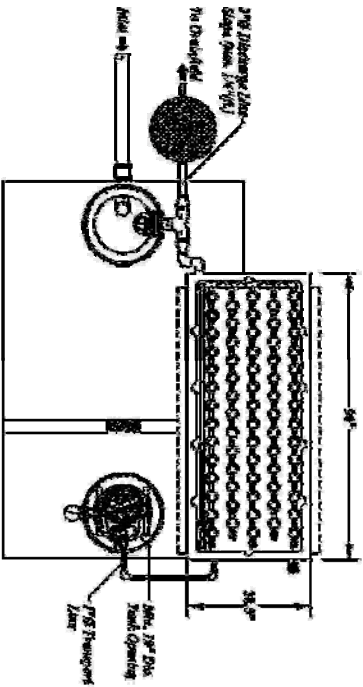
G. Should the system described in Section I fail to perform to the satisfaction of VDH during either the experimental or provisional evaluation periods, VDH may rescind or modify this approval. Prior to taking such action, VDH shall notify the manufacturer of the nature of the problem and of the action it intends to take. The actual status of the approval appears in Appendix III.

VIII. Monitoring

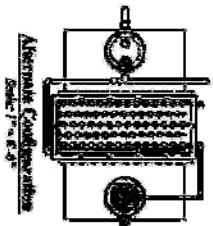
Monitoring is required for the duration of any experimental or provisional approval. Until such time as general approval is granted in writing, the manufacturer shall maintain a log of all systems installed. This log shall include the following minimum information: System location (by tax map, gpin, or permit number) owner's name, county, and soil conditions where the system was installed, and all associated physical, biological and chemical data if the system is one being monitored. This log shall be reported to the Division of Onsite Sewage and Water Services on a quarterly basis and shall be provided by the 15th of the month following the end of the quarter. The log shall be available to the Division within 5 business days upon request.

Appendix I
Advantex® Treatment and Disposal Drawings

AdvanTex® AX20 - Virginia



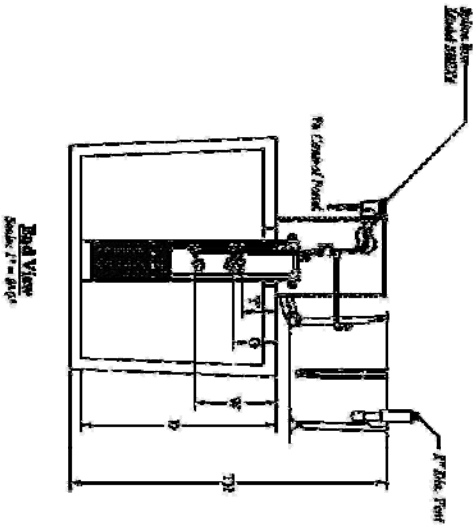
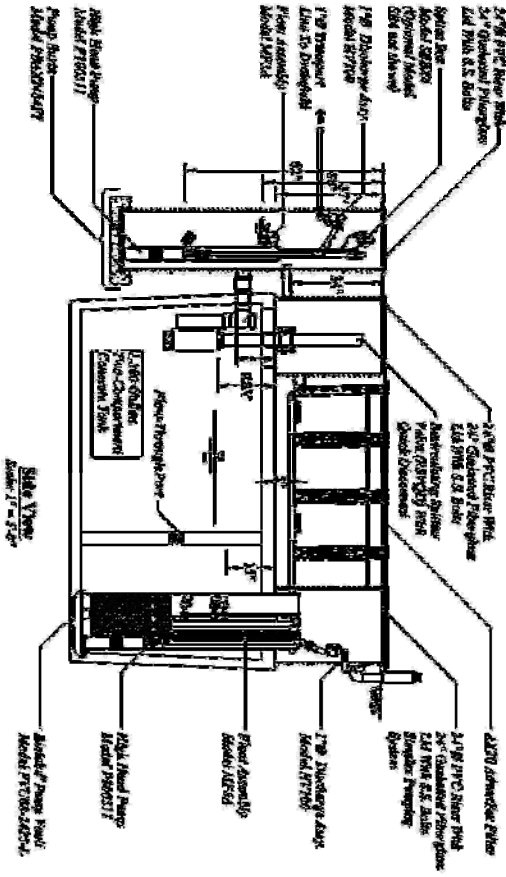
Top View
Scale: 1" = 6'-0"



Alternate Configuration
Scale: 1" = 6'-0"

Unit Manufacturer	Unit Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	IJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	IJ	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	IJ	JK	KL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	IJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	IJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	IJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	IJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	IJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	IJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	IJ	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	IJ	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	IJ	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	IJ	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	YG	YH	YI	IJ	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	IJ	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ
Unit Manufacturer	Unit Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	IJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	IJ	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	IJ	JK	KL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	IJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	IJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	IJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	IJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	IJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	IJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	IJ	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	IJ	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	IJ	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	IJ	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	YG	YH	YI	IJ	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	IJ	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ
Unit Manufacturer	Unit Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	IJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	IJ	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	IJ	JK	KL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	IJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	IJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	IJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	IJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	IJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	IJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	IJ	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	IJ	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	IJ	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	IJ	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	YG	YH	YI	IJ	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	IJ	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ
Unit Manufacturer	Unit Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

River Knowledge	
1	What is the name of the river that flows through the city of London?
2	Which river is the longest in the world?
3	What is the name of the river that flows through the city of Paris?
4	Which river is the longest in Europe?
5	What is the name of the river that flows through the city of New York?



Design and Installation Notes

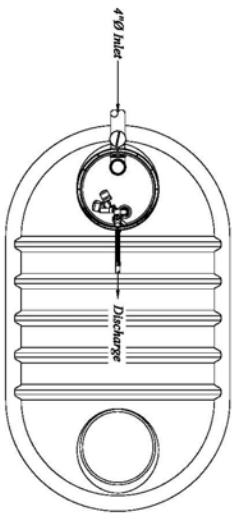
- The Suggested Riser Up For The Submersible
- Submersible Only To Be Performance By An On-site Authorized Service Provider



U.S. Patent 4,488,888 8,482,588-5,772,537-5,782,548 5,883,748-5,823,884-5,482,887 Other Patents Pending © 2005 Cresco Systems, Inc.	Designed By: Shawn Brown	Drawn By: Chris Jackson	Title: AdvanTex® - AX20 Virginia	
	Approved By:	Drawing: 1 OF 1	Drawing No. AX20-17A-16-1	
	Date Approved:	Revision: LE	Date: 5/26/2006	Scale: 1" = 3'-0"

AdvanTex® AX20 - Virginia Pump Discharge Options

Pump Tank Discharge

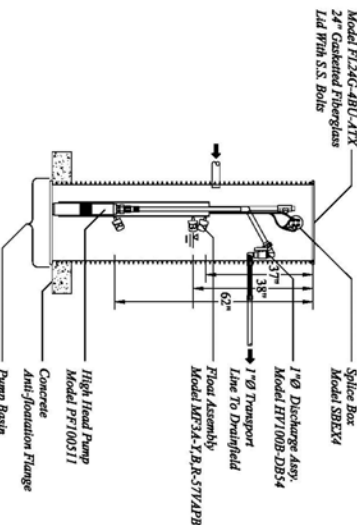


Top View

Note: Only discharge tanks from the manufacturers listed below shall be used.

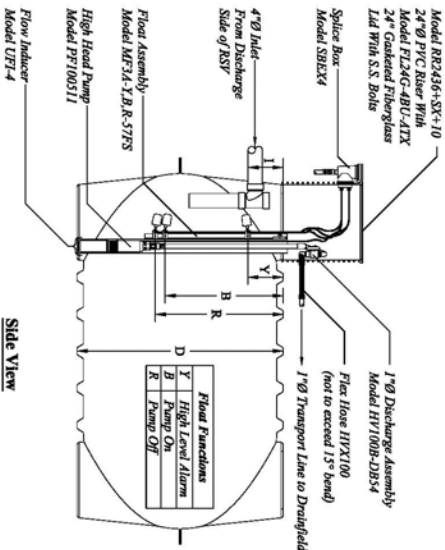
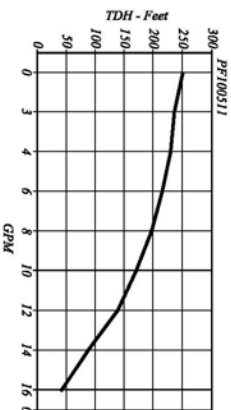
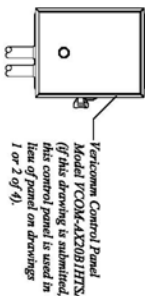
Discharge Tank Manufacturer	Tank Size	I	D	Y	B	R
Orencia Fiberglass Tank	1000 Gal.	11"	65"	11"	38"	40"
Whipless Ready Mix	1000 Gal.	15"	65"	15"	42.5"	45"
Beasley Concrete	1000 Gal.	16"	66"	16"	43.5"	46"

Pump Basin Discharge



Pump Basin Detail
Scale: 1" = 3'-0"

Pump Discharge
Control Panel Detail
Not To Scale



Side View

Note:
All Concrete tanks shall have PF1A24 cast into tank for acceptance of model RR24XX riser.
The Discharge conveyance system shown in these plans is acceptable for the following conditions: Less than 50 feet of static head and less than 500 feet of transport pipe. This system is acceptable regardless of the depth of the soil absorption system.
Tank Testing Specifications:
Concrete tanks may be allowed 24 hours to absorb water prior to hydrostatic testing.
All Tanks shall be tested in the field by filling the tank with water to 2 (two) inches above the riser / tank opening. The water level shall be maintained 2 inches above the riser for a minimum of 2 hours. Any drop in the water level indicates leakage. The tank may be drained and the installer and tank manufacturer may make one attempt to repair the tank to make the tank watertight. If the tank shall be repaired according to the procedure specified above, the tank shall be tested again. If the tank is not watertight, it shall be replaced with a structurally sound watertight tank at no cost to the homeowner.



U.S. Patents-4,439,323 5,492,635-6,372,137-5,360,556 5,980,748-5,531,894- 5,480,561 Other Patents Pending © 2005 Orencia Systems ®, Inc	Designed By: ENGINEERING	Drawn By: BEN SMITH	Title: AdvanTex® - AX20 Virginia	
	Approved By:	Drawing: 3 OF 4	Drawing No. NDW-ATX-VA 5	
	Date Approved:	Revision: A-09	Date: 7/30/2007	Scale: AS SHOWN



Appendix II
Approved Components for Advantex® Treatment and Dispersal System

Description	Model Number
AX 20 Advantex Filter	Model AX20
2" Diameter Vent	Model AX-Vent
Approved Tanks (Processing, Septic, or Recirculating)	Orengo Approved Manufacturers: Central Virginia Concrete 1,500 gallon Winchester Building Supply 1,500 gallon Orengo Fiberglass Tank 1,500 gallon C.T. Jamison 1,500 gallon C.T. Jamison 2,000 gallon Rockingham Precast 1,500 gallon Allied Tank 1,500 gallon Hanover Precast (deep bury) 1500 gallon Wrights Ready Mix 1500 gallon C.S. Hines 1500 gallon Beasley Concrete 1500 gallon
Recirculating Splitter Valve (RSVQD) with Quick Disconnect	Model RSV3QD-VA
Control Panel	
Gravity Discharge	Model VCOM-AX20A1HTSA
Pump Discharge (controlled dosing)	Model VCOM-AX20B1HTSA
Pump Discharge (timed dosing)	Model VCOM-AX20B1/2PTHTSA
Biotube Pump Vault	Model PVU68-2425
High Head Pump	Model PF300511/PF500511 (for 2AX20 units)
Float Assembly	Model MF3A-Y,G,W-33FS
Diameter Discharge Assembly	Model HV100B-DB54/HV200B-DB54 (for 2 AX20 units)
Splice Box	Model SBEX4
24" PVC Recirculating Valve Riser with 24" Gasketed Fiberglass Lid with Stainless Steel Bolts	Model RRAX2436+RS3 Model FL24G-4BU-ATX
24" PVC Pump Riser with 24" Gasketed Fiberglass Lid with Stainless Steel Bolts	Model RR2436+SX+10/ RR2436+SX+20 (for 2 AX20 units) Model FL24G-4BU-ATX
Discharge Pump Basin	Model PBAX2484FI+SX+10
High Head Pump	Model PF100511
Float Assembly	Model MF3A-Y,B,R-57PB-VA
1" Diameter Discharge Assembly	Model HV100B-DB54
Splice Box	Model SBEX4 (optional model SB4)
24" Gasketed Fiberglass Lid with Stainless Steel Bolts	Model FL24G-4BU-ATX

Optional Discharge Pump Tank Note: Concrete tanks cast with PRTA24 for acceptance of Model RR24 riser.	Orenco Approved Manufacturers: Any tank listed above Orenco Fiberglass Tank 1,000 gallon Wrights Ready Mix 1,000 gallon Beasley Concrete 1,000 gallon
24" PVC Riser with 24" Gasketed Fiberglass Lid with Stainless Steel Bolts	Model RR2436+SX+XX (Discharge size dependent upon pump selection and Pump Select) Model FL24G-4BU-ATX
Splice Box	Model SBEX4 (optional model SB4)
Float Assembly	Model MF3A Series (Determined by panel type)
High Head Pump	PF Series Pump (Determined by Pump Select)
Flow Inducer	Model UFI-4
Flex Hose	Model HV Series (Determined by Pump Select)
1" Discharge Assembly	Determined by Pump Select)

Appendix III

System Status				
	Texture Group			
	I	II	III	IV
AdvanTex[®]	Provisional	General	General	General
Bio-COIR[™]	Experimental	Experimental	Experimental	Experimental
Ecoflo[®]	General	General	General	Provisional
Eco-Pure[®]	Experimental	Experimental	Experimental	Experimental
Puraflo[®]	General	General	General	General

Applicants interested in what the terms “experimental,” “provisional,” and “general” mean relative to a sewage system’s status should review sections 12 VAC 5-610-441 through 12 VAC 5-610-444 of the *Regulations*.